IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Appellant:	**Giammarresi**		
Case no.:	**SEDN/047**		
Serial No.:	**09/458,897**	Filed:	**12/10/99**
Group Art Unit:	**2623**	Confirmation #:	**9422**
Examiner:	**Shang, Annan Q**		
Title:	**METHOD AND APPARATUS OF LOAD SHARING AND FAULT TOLERANCE IN AN INTERACTIVE VIDEO DISTRIBUTION SYSTEM**		

MAIL STOP APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SIR:

APPEAL BRIEF

Appellant submits this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2623 mailed June 23, 2008 rejecting claims 1 and 3-21.

In the event that an extension of time is required for this Appeal Brief to be considered timely, and a petition therefor does not otherwise accompany this Appeal Brief, any necessary extension of time is hereby petitioned for.

Appellant believes the only fee due is the **$270** Appeal Brief fee which is being charged to counsel's credit card. In the event Appellant is incorrect, the Commissioner is authorized to charge any other fees to Deposit Account No. 20-0782/**SEDN/047**.

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Real Party in Interest

The real party in interest is SEDNA PATENT SERVICES, LLC.

Related Appeals and Interferences

Appellant asserts that no appeals or interferences are known to Appellant, Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1 and 3-21 are pending in the application. Claims 1-21 were originally presented in the application. Claim 2 has been canceled. Claims 1, 3, 7-12, 15 and 21 have been amended. Claims 1 and 3-21 stand rejected as discussed below. The rejection of claims 1 and 3-21 is appealed.

Status of Amendments

All claim amendments have been entered.

Summary of Claimed Subject Matter

Embodiments of the present invention generally are directed to providing processor load sharing by incorporating redundant hardware and software at a head-end. In one embodiment, data processing times may be reduced almost in half by concurrently processing subsets of session-state data on two different head-end controller processors. (See e.g., Appellant's specification, p. 10, ll. 3-16). In other words, data may be divided into subparts and processed simultaneously by two different head-end controller processors. (See *Id.*).

For the convenience of the Board of Patent Appeals and Interferences, Appellant's independent claims 1 and 11 are presented below in claim format with elements reading on the various figures of the drawings and appropriate citations to at least one portion of the specification for each element of the appealed claims.

Claim 1 positively recites (with reference numerals, where applicable and cites to at least one portion of the specification added):

> 1. A method of distributing and sharing processing loads and increasing fault tolerance between provider equipment (see e.g., Appellant's specification, FIG. 1A and 1B) and subscriber equipment (124) of an interactive information distribution system (100), comprising the steps of:
>
> receiving, at a head-end (101), a request for video information from said subscriber equipment (124) (see e.g., Appellant's specification, p. 12, ll. 10-13);
>
> executing a video session from at least one of a plurality of managing modules (132) on a primary head-end controller (130_1) at said head-end (10) (see *Id.* at ll. 16-18);
>
> dedicating, at said head-end (101), at least one secondary head-end controller (130_2) respectively having said at least one managing module (132) as a resource for executing said video session, wherein said executing said video session comprises

concurrently processing different sub-parts of session-state data of said video session at said primary head-end controller (130_1) and said at least one secondary head-end controller (130_2) using a distributed managing module associated with each of said primary head-end controller (130_1) and said at least one secondary head-end controller (130_2) (see e.g., Appellant's specification, p. 10, ll. 3-16);

storing said session-state data from said executed video session on at least one storage device (137, 139) (see e.g., Appellant's specification, p. 7, l. 28 – p. 8, l. 3); and

streaming, from a stream server (102), said video information to said requesting subscriber equipment (124) during a normal mode of operation (see e.g., Appellant's specification, p. 13, ll. 4-11).

Claim 11 positively recites (with reference numerals, where applicable and cites to at least one portion of the specification added):

11. (Previously Presented) In an interactive video distribution system (100) including information provider equipment (see e.g., Appellants' specification, FIG. 1A and 1B) and subscriber equipment (124), apparatus comprising:

a stream server (102);

a plurality of head-end controllers (130_1, 130_2), coupled to said stream server (102), for managing a video session at a head-end (101), each head-end controller (130_1, 130_2) comprising a plurality of managing modules (132) for executing session-state data of said video session, wherein at least one of said managing modules (132) is a distributed managing module and processes different sub-parts of said session-state data of said video session

using at least two of said plurality of head-end controllers (130_1, 130_2) (see e.g., Appellant's specification, p. 10, ll. 3-16); and

a plurality of access controllers (140), coupled to said plurality of head-end controllers (130_1, 130_2), for interacting with said subscriber equipment (124) during said video session to responsively provide video information to said subscriber equipment (124) upon a request for video information from said subscriber equipment (124) (see e.g., Appellant's specification, p. 12, ll. 10-13, p. 13, ll. 4-11).

Grounds of Rejection to be Reviewed on Appeal

Claims 1 and 3-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,195,680 to Goldszmidt et al. ("Goldszmidt") in view of U.S. Patent No. 5,812,748 to Ohran et al. ("Ohran").

ARGUMENTS

I. THE EXAMINER FAILED TO ESTABLISH A *PRIMA FACIE* CASE OF OBVIOUSNESS BECAUSE GOLDSZMIDT IN VIEW OF OHRAN FAILS TO TEACH OR SUGGEST ALL OF THE CLAIM LIMITATIONS OF INDEPENDENT CLAIMS 1 AND 11

Claims 1 and 3-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,195,680 to Goldszmidt et al. ("Goldszmidt") in view of U.S. Patent No. 5,812,748 to Ohran et al. ("Ohran"). In addition, extensive reference was made in the rejections to U.S. Patent No. 5,918,017 to Attanasio et al. ("Attanasio"), which Goldszmidt incorporated by reference. The Appellant respectfully traverses the rejection.

Goldszmidt teaches a client-based dynamic switching of streaming servers for fault-tolerance and load balancing. Goldszmidt essentially teaches a redundant server architecture for switch over in case of failure or for load balancing. (See Goldszmidt, Abstract).

Ohran teaches a method for improving recovery performance from hardware and software errors in a fault-tolerant computer system. Ohran is generally directed to a backup computer system that runs a special mass storage access program that communicates with a mass storage emulator program on the network file server. (See Ohran, abstract; col. 11, l. 51 - col. 12, l. 6; Fig. 7).

Specifically, the Appellant submits that the combined teaching of Goldszmidt and Ohran does not teach or suggest concurrently processing different sub-parts of session-state data of said video session at said primary head-end controller and said at least one secondary head-end controller, as positively claimed by the Appellant's independent claims 1 and 11.

Claim 1 recites, in part:

> "dedicating, at said head-end, at least one secondary head-end controller respectively having said at least one managing module as a resource for executing said video session, wherein said executing said video session comprises concurrently

> processing different sub-parts of session-state data of said video session at said primary head-end controller and said at least one secondary head-end controller using a distributed managing module associated with each of said primary head-end controller and said at least one secondary head-end controller." (Emphasis added).

Similarly, claim 11 recites, in part:

> "a plurality of head-end controllers, coupled to said stream server, for managing a video session at a head-end, each head-end controller comprising a plurality of managing modules for executing session-state data of said video session, wherein at least one of said managing modules is a distributed managing module and processes different sub-parts of said session-state data of said video session using at least two of said plurality of head-end controllers." (Emphasis added).

Claims 1 and 11 explicitly recite that the sub-parts of session-state data that are being concurrently processed are different sub-parts of the data belonging to one session. Support for this can be found, for example, in the Appellant's specification on p. 9, line 30 - p. 10, line 10. As explicitly recited in the Appellant's independent claims, the Appellant's invention helps reduce processing times of session state data by dividing the session state data into different sub-parts and subsequently, processing each of the sub-parts by two different head-end controllers concurrently (i.e. in parallel or simultaneously).

Specifically, p. 10, lines 6-10 teaches that session-state data processed by the primary and secondary head-end controllers are stored on their respective dedicated fixed storage devices and memories, and "[i]n this fashion, the time to process data via a distributed managing module is beneficially reduced almost in half" (p. 10, lines 9-10).

Goldszmidt only teaches a sequential switchover method in case of a failure or a method for load balancing. For example, Goldszmidt teaches, in reference to Fig. 3:

> "In FIG. 3(a), an original connection 3.9, assigned by the control server 3.1 to deliver the multimedia stream from a primary streaming server 3.2 to the client agent 3.5 fails." (col. 9, lines 7-9);

> "As a result of this failure, the client agent 3.5 can send a message 3.10 to the control server 3.1, requesting to be switched to an alternate server." (col. 9, lines 14-16);
>
> "the control server 3.1 then redirects 3.1 1 the Client Agent's multimedia stream request to an alternate server 3.3 in the set of streaming servers 3.7" (col. 9, lines 17-19)
>
> "Referring now to FIG. 3(c), the selected alternate server 3.7 starts streaming data to the client agent over the Link 3.12 with minimal or no disruption" (col. 9, lines 20-22).

In other words, Goldszmidt teaches that when the link 3.9 fails, the control server 3.1 redirects the request from server 3.6 to server 3.7 for processing, so that the processed stream can be provided to the client agent 3.5 by server 3.7 via a different link 3.12 (see Fig.3). Since processing of the client's request is switched from server 3.6 to server 3.7 only upon failure of link 3.9, servers 3.6 and 3.7 clearly are not processing concurrently, i.e., at the same time, any sub-parts of session-state data relating to the client's request.

Instead, switching from server 3.6 to server 3.7 means that the request is processed in a sequential manner, i.e., first on server 3.6 (before the failure of link 3.9), and then on server 3.7, after link 3.9 fails.

In addition, the Appellant's argument that Goldszmidt does not teach any concurrent processing of sub-parts of session-state data for a session of a client's request is further supported by Goldszmidt's teaching in Figs. 1-2, in which the control server acts as a gateway for a number of client requests and redirect these requests between the two sets of streaming servers. (e.g., 1.5 and 1.6 in Fig. 1, or 2.6 and 2.7 in Fig. 2; emphasis added). "Each instance of the streaming process begins with a client agent 1.8 connecting to the control server 1.1 requesting the multimedia stream. The control server then assigns and redirects the client to one of the streaming servers in either of the two groups (1.5, 1.6)" (col. 5, lines 54-58; Fig. 1). In other words, each client request is directed to a single processor to be processed. That is the each client request is not divided among multiple servers to be concurrently processed.

The Examiner appears to consistently either disregard the limitation of "concurrently processing" or miss-interpret the limitation of "concurrently processing" as "continually processing." For example, the Examiner states in the Office Action dated June 23, 2008 (and repeatedly in previous office actions) that Goldszmidt teaches "maintaining delivery of the multimedia stream . . . for example FIG. 3(a) the original connection link 3.9 fails, the control server 3.1 re-directs the requested multimedia stream from server 3.6to server 3.7 through link 3.12 . . . where the client continuously receives the real-time multimedia stream with minimal disruption." Clearly, even the example provided by the Examiner supports the Appellant's argument that Goldszmidt only teaches an embodiment of redundancy in case of failure or load balancing as argued by the Appellant's above. Thus, based on the example provided by the Examiner, the Examiner acknowledges that Goldszmidt fails to teach or suggest concurrently processing different sub-parts of session-state data of said video session at said primary head-end controller and said at least one secondary head-end controller.

In other words, the embodiments of Goldszmidt attempts to either resolve possible failure of a server by redundancy using a switch over method or achieve over burdening a single server by using load balancing. The examples provided by both the Examiner and the Appellant support this interpretation. In contrast, the embodiment claimed by the Appellant's independent claims 1 and 11 attempts to reduce overall processing times by concurrently processing different sub-parts of session-state data of said video session at said primary head-end controller and said at least one secondary head-end controller.

Concurrent is defined as "occurring or existing simultaneously or side by side." *Random House Webster's Unabridged Dictionary* 2d., 425 (New York, 2001). Clearly, Goldszmidt does not teach or suggest any embodiment where a single piece of data is sub-divided and processed "simultaneously or side by side".

Furthermore, Ohran fails to bridge the substantial gap left by Goldzmidt because Ohran also fails to teach or suggest concurrently processing different sub-parts of session-state data of said video session at said primary head-end

controller and said at least one secondary head-end controller. Ohran only teaches a backup system in which two computer systems each runs a mass storage emulator that allows one system to access the mass storage device on the other system, and thus, acts as a backup for each other (Ohran, Abstract; col. 11, line 51 - col. 12, line 6; Fig. 7). In other words, when one computer system fails, the other system can still access an identical copy of the data on the non-functioning computer's mass storage device without delay.

But emulating a mass storage device on a backup computer is far different from having two devices concurrently processing different sub-parts of session-state data of a video session. In the Appellant's invention, the use of different controllers to concurrently process different sub-parts of session-state data of a video session allows the data to be processed faster than without concurrent processing.

Ohran teaches something entirely different -- it provides two mass storage devices that are mirrors of each other, i.e. the same data is stored in each device, e.g., col. 12, lines 20-22. Therefore, even if Ohran is broadly interpreted, Ohran at best teaches the ability to retrieve identical copies of data from two different computers when both are operational. There is nothing that suggests any concurrent processing of different sub-parts of data by different servers. In summary, Ohran's computer backup system with duplicate mass storage devices simply does not suggest a method that includes concurrent processing of session-state data in the specific manner provided in Appellant's invention.

As a result, even if Goldszmidt and Ohran were combined, the combination would fail to teach or suggest concurrently processing different sub-parts of session-state data of said video session at said primary head-end controller and said at least one secondary head-end controller. Rather the combination would only teach a back up system with two identical copies of each system, as taught by Ohran, wherein one system may switch over to the second system upon failure or requests may be balanced among servers within both systems, as taught by Goldsmidt. Notably, the combination fails to teach or suggest concurrently processing different sub-parts of session-state data of said

video session at said primary head-end controller and said at least one secondary head-end controller. As a result, the Appellant respectfully submits that the combination of Goldszmidt and Ohran clearly fail to render obvious the Appellant's independent claims 1 and 11.

Morever, Claims 3-10 and 12-21 depend directly or indirectly from claims 1 and 11, respectively, and thus, inherit the patentable subject matter of claims 1 and 11, while adding additional elements and further defining elements. Therefore, the Appellant contends that claims 3-10 and 12-21 are also patentable over the combination of Goldszmidt and Ohran under §103 for at least the reasons given above with respect to claims 1 and 11.

CONCLUSION

Thus, Appellant submits that all of the claims presently in the application are allowable under the provision of 35 U.S.C. §103.

For the reasons advanced above, Appellant respectfully urges that the rejection of claims 1 and 3-21 is improper. Reversal of the rejection of the Office Action is respectfully requested.

Respectfully submitted,

11/24/08
Date

Eamon J. Wall
Registration No. 39,414
Patterson & Sheridan, LLP
Attorneys at Law
595 Shrewsbury Avenue, Suite 100
Shrewsbury, New Jersey 07702
Telephone: (732) 530-9404
Facsimile: (732) 530-9808
Attorney for Appellant(s)

CLAIMS APPENDIX

1. (Previously Presented) A method of distributing and sharing processing loads and increasing fault tolerance between provider equipment and subscriber equipment of an interactive information distribution system, comprising the steps of:

receiving, at a head-end, a request for video information from said subscriber equipment;

executing a video session from at least one of a plurality of managing modules on a primary head-end controller at said head-end;

dedicating, at said head-end, at least one secondary head-end controller respectively having said at least one managing module as a resource for executing said video session, wherein said executing said video session comprises concurrently processing different sub-parts of session-state data of said video session at said primary head-end controller and said at least one secondary head-end controller using a distributed managing module associated with each of said primary head-end controller and said at least one secondary head-end controller;

storing said session-state data from said executed video session on at least one storage device; and

streaming, from a stream server, said video information to said requesting subscriber equipment during a normal mode of operation.

2. (Canceled)

3. (Previously Presented) The method of claim 1, wherein said executing said video session further comprises executing said video session on at least one non-distributed managing module associated with said primary head-end controller.

4. (Original) The method of claim 3, comprising the steps of:

processing said session-state data through said at least one distributed managing module concurrently on said primary head-end controller and said at least one secondary head-end controller, wherein said at least one distributed managing module on said primary head-end controller and said at least one secondary head-end controller is in an active mode; and

processing said session-state data from said at least one non-distributed managing module on said primary head-end controller, wherein said at least one non-distributed managing module on said primary head-end controller is in an active mode, and wherein said at least one non-distributed managing module on said secondary head-end controller is in a standby mode.

5. (Original) The method of claim 4, a method comprising the steps of:

processing said session-state data produced by said primary head-end controller via said at least one secondary head-end controller in a failure mode of operation, wherein said primary head-end controller becomes inoperative.

6. (Original) The method of claim 5, comprising the steps of:

streaming video information from a stream server to an access controller in said normal mode of operation, wherein said primary head-end controller manages said video session between said stream server and at least one access controller; and

streaming video information from said stream server to said access controller in said failure mode of operation, wherein said secondary head-end controller manages said video session between said stream server and said access controller.

7. (Previously Presented) The method of claim 1, comprising the steps of:

storing said session-state data produced by said primary head-end controller on at least one non-volatile storage device coupled to said primary head-end controller; and

storing said session-state data produced by said at least one secondary head-end controller on at least one non-volatile storage device coupled to said primary head-end controller.

8. (Previously Presented) The method of claim 7, wherein said at least one storage device comprises a plurality of storage devices, said method further comprising the step of:

replicating said stored session-state data from one of said plurality of storage devices coupled to said primary head-end controller, to each of the remaining storage devices of said plurality of storage devices coupled to said at least one secondary head-end controller; and

wherein said at least one secondary head-end controller retrieves said session-state data executed by said managing modules of said primary head-end controller for continuing said video session with said subscriber equipment.

9. (Previously Presented) The method of claim 1, further comprising the steps of:

storing said session-state data produced by said primary head-end controller on a volatile memory device coupled to said primary head-end controller; and

storing said session-state data produced by said at least one secondary head-end controller on said volatile memory device coupled to said primary head-end controller.

10. (Previously Presented) The method of claim 9, comprising the step of:

replicating said stored session-state data from said volatile memory device coupled to said primary head-end controller, to at least one volatile memory device coupled to said at least one secondary head-end controller; and

wherein said at least one secondary head-end controller retrieves said session-state data executed by said managing modules of said primary head-end controller for continuing said video session with said subscriber equipment.

11. (Previously Presented) In an interactive video distribution system including information provider equipment and subscriber equipment, apparatus comprising:

a stream server;

a plurality of head-end controllers, coupled to said stream server, for managing a video session at a head-end, each head-end controller comprising a plurality of managing modules for executing session-state data of said video session, wherein at least one of said managing modules is a distributed managing module and processes different sub-parts of said session-state data of said video session using at least two of said plurality of head-end controllers; and

a plurality of access controllers, coupled to said plurality of head-end controllers, for interacting with said subscriber equipment during said video session to responsively provide video information to said subscriber equipment upon a request for video information from said subscriber equipment.

12. (Previously Presented) The apparatus of claim 11, wherein each head-end controller of said plurality of head-end controllers further comprises:

a processor for processing session-state data produced by said plurality of managing modules; and

memory devices, coupled to said processor, for temporarily storing said session-state data.

13. (Original) The apparatus of claim 12 wherein said plurality of head-end controllers comprises a primary head-end controller and at least one secondary head-end controller.

14. (Original) The apparatus of claim 13, wherein:

in a normal mode of operation, said primary head-end controller interacts with said stream server to provide said video information to said subscriber equipment, and said at least one secondary head-end controller remains in a standby mode; and

in a failure mode of operation, said primary head-end controller is inoperative, and said at least one secondary head-end controller interacts with said stream server to provide video information to said subscriber equipment.

15. (Previously Presented) The apparatus of claim 14, wherein said plurality of managing modules comprise:

at least one non-distributed managing module, for processing session-state data by said primary head-end controller.

16. (Original) The apparatus of claim 15, wherein:

in a failure mode of operation, a portion of said plurality of access controllers coupled to said inoperable primary head-end controller interface with said secondary head-end controller, whereby all of said plurality of access controllers are interfacing with said at least one secondary head-end controller, to responsively interact with said subscriber equipment.

17. (Original) The apparatus of claim 16, wherein:

in a failure mode of operation, said at least one distributed managing module and said at least one non-distributed managing module executes said video session through said at least one secondary head-end controller.

18. (Original) The apparatus of claim 17 further comprising:

a centrally networked storage device coupled to said primary head-end controller and said at least one secondary head-end controller, for centrally storing said session-state data produced by said plurality of managing modules; and

in said failure mode of operation, said at least one secondary head-end controller retrieves said session-state data stored on said centrally networked storage device by said primary head-end controller, for continued interaction with said stream server to provide said video information to said subscriber equipment.

19. (Original) The apparatus of claim 17, further comprising:

a plurality of local storage devices, coupled to said primary head-end controller and said at least one secondary head-end controller, for locally storing said session-state data produced by said plurality of managing modules.

20. (Original) The apparatus of claim 19, wherein:

said session-state data is replicated from one of said plurality of local storage devices coupled to said primary head-end controller, and stored on the remaining plurality of local storage devices of said at least one secondary head-end controller.

21. (Previously Presented) The apparatus of claim 20, wherein:

in a failure mode of operation, said at least one secondary head-end controller retrieves said replicated session-state data stored on said remaining plurality of storage devices, for continued interaction with said stream server to provide said video information to said subscriber equipment.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None